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AUTHOR Gilbert, Charles D.
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ABSTRACT

A total of 10 basic science series was examined, using the Spache, Dale-Chall, Lorge, and Fry readability formulas as assessment instruments of readability. To obtain a comparative sampling of the readability of each book for each series, the books were divided into three equal parts, and the passage from the middle of each one-third part was designated as the sample to which the appropriate formula was then applied. The author concluded that (1) when various reading formulas were applied to texts of selected publishers the averages tended to be consistent with the mean reading level of that grade, (2) results derived from computing the Spearman rank order correlation coefficient among the various formulas when applied to the grade levels of the publishers indicated that no highly correlated relationships existed, and (3) higher but negligible correlations existed in the fourth and fifth grades between the Dale-Chall and the Lorge formulas and between the Dale-Chall and Fry formulas in the fifth and sixth grades. The author ranked the textbooks used in this study according to reading difficulty and mode of presentation. References and tables are included. (AW)

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AN EXAMINATION OF READABILITY LEVELS FOR SELECTED BASIC SCIENCE TEXTS

Introduction

As more and more subject matter is put into the elementary school, departmentalization as well as specialization takes on greater emphasis.

In current basal science programs the teacher is required to cover a variety of topics and in so doing has very little time left to give thought to teaching developmental reading* using science material. Also in some cases special teachers are assigned who have little experience or training in effective methodology for the teaching of reading.

Educators should make every effort to develop and use science textbooks which correlate highly with known readability levels of students and in addition provide suggestions whereby developmental reading may be implemented through the teaching of science.

Rationale

Results of numerous studies, Chall (1), Dale-Chall (2), Gates (3), Lorge (4), Yoakam (5), indicate quite conclusively the importance of adopting the reading level of text material to the students reading achievement level. From these and similar studies we can predict that when material in science texts is prepared in such fashion so as to compliment both the independent reading and experience levels of students, the students in turn will become more effective in interpreting the meaning of the scientific concepts presented in these texts. In order for this to occur the students reading achievement must be equal to or greater than the readability level of the texts they are using. By being able to effectively read

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*developmental reading - Process in which the main purpose of the teacher is to bring about an improvement in reading skills.

the materials presented students will be more able to associate the direct experiences of experimentation with the vicarious experiences of reading, developing strong, meaningful relationships.

DeChant states that if the major aim of reading is the comprehension of meaning then the teacher must be interested in the measurement of the comprehensibility of materials to be used with students. It is not enough to say that material is difficult or easy (6). In order to accomplish this the teacher must have reference points or scales with which to judge printed material as well as the reading levels of the students.

Purpose

It was the purpose of this study to determine the approximate readability levels of major elementary school science series using the Spache, Dale-Chall, Lorge, and Fry formulas. More specifically, the purpose of this study was to answer the following two questions:

1. Are readability levels of science texts consistent with the reading levels of the appropriate grade level?
2. To what degree does a relationship exist among the rank order of publishers in regard to the level of reading difficulty for each grade as determined by selected readability formulas?

Method

The study used, for its testing sample, a total of ten basic science series. The sample included the most recent series from each of the following publishers: Harper-Row, Silver-Burdett, D. C. Heath & Co., MacMillan Co., Allyn & Bacon, Inc., Scott Foresman and Co., Laidlow Bros., Harcourt, Brace, and World, Lyons & Carnohan, and C. E. Merrill.

The Spache, Dale-Chall, Lorge, and Fry readability formulas were selected because of the different criteria they used for reading assessment.

The Spache Readability formula, applicable to primary grades, is based upon two elements. One of these is sentence length and the other the percentage of "hard" words; that is, words outside of the Dale list of 769 words.

The Dale-Chall formula is applicable to materials at or above 4th grade reading difficulty. It is based on two counts. The first is average sentence length and the other is the percentage of unfamiliar words outside the Dale list of 3000 words.

The Lorge formula for the 4-5-6 grades considers prepositional phrases as important in determining the reading level in addition to the number of sentences and hard words in the sample.

The Fry formula considers the average number of sentences and the average number of syllables per 100 words as the determiners in estimating the readability level of texts.

In order to obtain a comparative sampling of the readability levels of each book for each series the books were divided into three equal parts. The passage from the middle of each one-third part was designated as the sample. In this manner three samples were obtained from each book in order to determine the average reading level of that book. The samples included only content material.

The appropriate formula was then applied to each sample of each book for each of the series.

In order to analyze the question, are readability levels of science texts consistent with reading levels of students, measures of central tendency were used to compare readability levels of the selected texts with the corresponding grade level.

The following tables denote the computed readability level according to the criteria of the particular formula for each science textbook. The average

readability score used in the study was determined by combining the readability level from each one-third part of each book. The tables also include the rank order scores of publishers according to reading difficulty for each of the textbooks for each formula. In each case the highest average readability score is awarded the number 1.

Readability Tables

Table 1-A Spache Readability Formula (1-3)

	Grade 1					Grade 2					Grade 3				
Publisher	1/3	1/2	2/3	avg.	rank order	1/3	1/2	2/3	avg.	rank order	1/3	1/2	2/3	avg.	rank order
Harper & Row	2.4	1.8	1.7	1.8	6.5	2.4	2.2	2.2	2.2	7.0	3.0	2.8	2.8	2.9	3.0
Silver Burdett	2.3	2.0	2.1	2.2	3.0	2.4	2.9	2.7	2.7	1.5	3.0	3.4	3.1	3.2	1.5
D. C. Heath	1.8	1.8	1.9	1.8	6.5	1.9	2.7	2.5	2.4	3.5	3.0	2.4	2.7	2.7	6.0
McMillan	1.7	1.7	1.6	1.7	8.5	1.3	2.2	2.6	2.0	10.0	2.7	2.4	3.1	2.7	6.0
Allyn & Bacon	1.7	1.9	2.3	2.0	5.0	2.0	2.4	2.2	2.2	7.0	2.7	2.5	2.9	2.7	6.0
Scott Foresman	1.6	1.8	1.8	1.7	8.5	1.8	2.3	2.1	2.1	9.0	2.5	2.4	3.0	2.6	8.5
Laidlaw	1.8	2.1	2.4	2.1	4.0	2.3	2.2	2.1	2.2	7.0	2.7	2.6	2.6	2.6	8.5
Harcourt, Brace & World	2.0	2.4	2.6	2.3	1.5	3.0	2.5	2.5	2.7	1.5	3.1	2.7	2.7	2.8	4.0
Lyons & Carnahan	1.4	1.5	1.5	1.5	10.0	2.6	2.5	1.9	2.3	5.0	2.4	2.2	2.4	2.3	10.0
C. E. Merrill	1.9	2.3	2.6	2.3	1.5	2.3	2.5	2.4	2.4	3.5	3.6	2.7	3.2	3.2	1.5
	M = 1.9					M = 2.3					M = 2.8				

Table 1-B Fry Readability Formula (1-3)

	Grade 1					Grade 2					Grade 3				
Publisher	1/3	1/2	2/3	avg.	rank order	1/3	1/2	2/3	avg.	rank order	1/3	1/2	2/3	avg.	rank order
Harper & Row	1.0	1.0	2.0	1.3	1.0	1.0	2.0	2.0	1.7	5.0	2.0	4.0	4.0	3.3	4.5
Silver Burdett	1.0	1.0	1.0	1.0	6.0	1.0	1.0	2.0	1.3	7.0	1.0	3.0	3.0	2.3	8.0
D. C. Heath	1.0	1.0	1.0	1.0	6.0	1.0	3.0	2.0	2.0	2.5	6.0	1.0	3.0	3.3	4.5
McMillan	1.0	1.0	1.0	1.0	6.0	1.0	3.0	2.0	2.0	2.5	4.0	6.0	6.0	5.3	1.0
Allyn & Bacon	1.0	1.0	1.0	1.0	6.0	2.0	2.0	2.0	2.0	2.5	2.0	2.0	2.0	2.0	9.5
Scott Foresman	1.0	1.0	1.0	1.0	6.0	1.0	1.0	1.0	1.0	9.5	1.0	2.0	3.0	2.0	9.5
Laidlaw	1.0	1.0	1.0	1.0	6.0	3.0	1.0	2.0	2.0	2.5	4.0	3.0	4.0	3.7	2.5
Harcourt, Brace & World	1.0	1.0	1.0	1.0	6.0	1.0	1.0	1.0	1.0	9.5	3.0	3.0	2.0	2.7	6.5
Lyons & Carnahan	1.0	1.0	1.0	1.0	6.0	1.0	1.0	2.0	1.3	7.0	2.0	2.0	4.0	2.7	6.5
C. E. Merrill	1.0	1.0	1.0	1.0	6.0	1.0	2.0	1.0	1.3	7.0	6.0	2.0	3.0	3.7	2.5
				M = 1.0					M = 1.6					M - 3.0	

Table 1-C Lorge Readability Formula (4-6)

	Grade 4					Grade 5					Grade 6				
Publisher	1/3	1/2	2/3	avg.	rank order	1/3	1/2	2/3	avg.	rank order	1/3	1/2	2/3	avg.	rank order
Harper & Row	5.1	4.5	4.5	4.7	2.5	5.1	6.2	5.3	5.6	1.0	6.1	6.3	6.7	6.4	1.0
Silver Burdett	4.8	4.9	4.8	4.8	1.0	5.2	5.6	5.5	5.4	2.0	6.5	6.1	6.2	6.2	2.0
D. C. Heath	4.3	5.0	4.9	4.7	2.5	4.7	4.4	4.2	4.4	7.5	5.0	4.8	5.1	5.0	4.5
McMillan	4.2	4.2	3.3	3.9	9.0	4.6	5.4	5.5	5.2	3.5	4.6	4.4	4.1	4.3	9.0
Allyn & Bacon	4.3	4.1	4.3	4.2	5.5	4.5	4.8	3.7	4.3	10.0	4.7	4.6	3.4	4.2	10.0
Scott Foresman	3.8	4.0	4.2	4.0	7.5	5.2	5.3	5.2	5.2	3.5	6.0	5.9	6.0	6.0	3.0
Laidlaw	4.4	4.5	4.2	4.3	4.0	4.1	4.3	4.7	4.4	7.5	4.7	4.8	4.7	4.7	8.0
Harcourt, Brace World	3.9	4.1	4.1	4.0	7.5	4.3	4.1	4.7	4.4	7.5	4.6	5.0	5.1	4.9	6.0
Lyons & Carnahan	3.7	3.0	3.8	3.5	10.0	4.4	4.1	4.7	4.4	7.5	4.6	5.3	5.2	5.0	4.5
C. E. Merrill	4.7	3.5	4.4	4.2	5.5	4.5	4.1	4.9	4.5	5.0	4.7	4.2	5.5	4.8	7.0
				M = 4.2					M = 4.8					M = 5.2	

Table 1-D Fry Readability Formula (4-6)

	Grade 4					Grade 5					Grade 6				
Publisher	1/3	1/2	2/3	avg.	rank order	1/3	1/2	2/3	avg.	rank order	1/3	1/2	2/3	avg.	rank order
Harper & Row	6.0	5.0	7.0	6.0	2.0	8.0	5.0	7.0	6.7	4.0	9.0	4.0	9.0	7.3	2.0
Silver Burdett	8.0	3.0	1.0	4.0	8.5	6.0	6.0	5.0	5.7	5.5	8.0	3.0	8.0	6.3	5.0
D. C. Heath	6.0	4.0	3.0	4.3	6.5	7.0	5.0	5.0	5.7	5.5	6.0	5.0	3.0	4.7	10.0
McMillan	5.0	4.0	5.0	4.7	4.5	6.0	8.0	8.0	7.3	2.0	7.0	5.0	5.0	5.7	7.5
Allyn & Bacon	5.0	3.0	3.0	3.7	10.0	4.0	7.0	3.0	4.7	9.0	5.0	6.0	4.0	5.0	9.0
Scott Foresman	3.0	5.0	5.0	6.5	6.5	6.0	3.0	6.0	5.0	8.0	6.0	4.0	7.0	5.7	7.5
Laidlaw	5.0	3.0	7.0	5.0	3.0	9.0	6.0	9.0	8.0	1.0	7.0	6.0	6.0	6.3	5.0
Harcourt, Brace World	3.0	6.0	5.0	4.7	4.5	5.0	2.0	5.0	4.0	10.0	6.0	9.0	10.0	8.3	1.0
Lyons & Carnahan	6.0	3.0	3.0	4.0	8.5	7.0	7.0	7.0	7.0	3.0	7.0	6.0	6.0	6.3	5.0
C. E. Merrill	6.0	7.0	6.0	6.3	1.0	9.0	3.0	4.0	5.3	7.0	6.0	4.0	11.0	7.0	3.0
				M = 4.9					M = 5.9					M = 6.3	

Table 1-E Dale-Chall Readability Formula (4-6)

	Grade 4					Grade 5					Grade 6				
Publisher	1/3	1/2	2/3	avg.	rank order	1/3	1/2	2/3	avg.	rank order	1/3	1/2	2/3	avg.	rank order
Harper & Row	6.4	7.9	6.7	7.0	1.0	6.9	5.8	6.5	6.4	1.0	6.1	6.3	6.7	6.4	10.0
Silver Burdett	5.4	5.3	5.3	5.3	4.0	6.0	6.3	6.4	6.2	2.0	6.5	6.1	6.2	6.2	1.0
D. C. Heath	5.4	6.2	5.5	5.7	2.0	5.9	6.0	5.5	5.8	5.0	5.0	4.8	5.1	5.0	5.5
McMillan	5.0	4.6	4.5	4.7	8.5	5.8	6.5	5.6	6.0	3.0	4.6	4.4	4.1	4.3	8.5
Allyn & Bacon	4.8	5.2	5.1	5.0	6.0	5.4	6.0	4.7	5.4	8.0	4.7	4.6	3.4	4.2	7.0
Scott Foresman	5.5	4.9	4.8	5.1	5.0	5.3	4.9	5.7	5.3	10.0	6.0	5.9	6.0	6.0	8.5
Laidlaw	4.6	4.0	5.4	4.7	8.5	6.0	5.7	5.6	5.8	5.0	4.7	4.8	4.7	4.7	2.0
Harcourt, Brace & World	4.8	5.9	5.5	5.4	3.0	6.1	5.3	6.1	5.8	5.0	4.6	5.0	5.1	4.9	3.0
Lyons & Carnahan	4.5	4.6	4.7	4.6	10.0	5.1	5.4	5.6	5.4	8.0	4.6	5.3	5.2	5.0	5.5
C. E. Merrill	4.4	4.7	5.2	4.8	7.0	5.3	5.6	5.2	5.4	8.0	4.7	4.2	5.5	4.8	4.0
				M = 5.2					M = 5.8					M = 5.2	

The data provided from the readability tables indicate that when various reading formulas are applied to texts of selected publishers the averages tend to be consistent with the mean reading level of that grade. Examination of the passages suggests that the higher readability scores are due primarily to the terminology and sentence structure employed to develop a particular scientific concept or generalization.

In order to analyze the question, to what degree does a relationships exist among the rank order of publishers in regard to the level of reading difficulty for each grade as determined by selected readability formulas, the Spearman rank order correlation coefficient was computed among grade levels using the selected readability formulas.

The following tables indicate the degree of correlation which exists at each grade level among the rank order of publishers according to selected readability formulas.

Correlations Between Readability Formulas Among Publishers

Table 2-A Spache - Fry (1-3)

	Grade 1				Grade 2				Grade 3			
	Rank Orders				Rank Orders				Rank Orders			
Publisher	Spache	Fry	D	D^2	Spache	Fry	D	D^2	Spache	Fry	D	D^2
Harper-Row	6.5	1	5.5	30.25	7.0	1.0	6.0	36.0	3.0	4.5	1.5	2.25
Silver-Burdett	3.0	6	3.0	9.0	1.5	2.0	.5	.25	1.5	8.0	6.5	42.25
D. C. Heath	6.5	6	.5	.25	3.5	5.0	1.5	2.25	6.0	4.5	1.5	2.25
McMillan	8.5	6	2.5	6.25	10.0	3.0	7.0	49.0	6.0	1.0	5.0	25.0
Allyn-Bacon	5.0	6	1.0	1.0	7.0	8.0	1.0	1.0	6.0	9.5	3.5	12.25
Scott-Foresman	8.5	6	2.5	6.25	9.0	10.0	1.0	1.0	8.5	9.5	1.0	1.0
Laidlaw	4.0	6	2.0	4.0	7.0	5.0	2.0	4.0	8.5	2.5	6.0	36.0
Harcourt, Brace & World	1.5	6	4.5	20.25	1.5	5.0	3.5	12.25	4.0	6.5	2.5	6.25
Lyon-Carnahan	10.0	6	4.0	16.0	5.0	8.0	3.0	9.0	10.0	6.5	3.5	12.25
C. E. Merrill	1.5	6	4.5	20.25	3.5	8.0	4.5	20.25	1.5	2.5	1.0	1.0

$\Sigma D^2 = 113.5$ $\Sigma D^2 = 155.0$ $\Sigma D^2 = 148.5$

$R = 1 - \frac{6(113.5)}{10(100-1)}$ $R = 1 - \frac{6(155.0)}{10(100-1)}$ $R = 1 - \frac{6(148.5)}{10(100-1)}$

$R = 1.00 - .68 = .32$ $R = 1.00 - .94 = .06$ $R = 1.00 - .90 = .10$

Table 2-B Dale-Chall - Lorge (4-6)

	Grade 4				Grade 5				Grade 6			
	Rank Orders				Rank Orders				Rank Orders			
Publisher	Dale-Chall	Lorge	D	D^2	Dale-Chall	Lorge	D	D^2	Dale-Chall	Lorge	D	D^2
Harper-Row	1.0	2.5	1.5	2.25	1.0	1.0	0.0	0.0	10.0	1.0	9.0	81.0
Silver-Burdett	4.0	1.0	3.0	9.0	2.0	2.0	0.0	0.0	1.0	2.0	1.0	1.0
D. C. Heath	2.0	2.5	.5	.25	5.0	7.5	2.5	6.25	5.5	4.5	1.0	1.0
McMillan	8.5	9.0	.5	.25	3.0	3.5	.5	.25	8.5	9.0	.5	.25
Allyn-Bacon	6.0	5.5	.5	.25	8.0	10.0	2.0	4.0	7.0	10.0	3.0	9.0
Scott-Foresman	5.0	7.5	2.5	6.25	10.0	3.5	6.5	42.25	8.5	3.0	5.5	30.25
Laidlaw	8.5	4.0	4.5	20.25	5.0	7.5	2.5	6.25	2.0	8.0	6.0	36.0
Harcourt, Brace & World	3.0	7.5	4.5	20.25	5.0	7.5	2.5	6.25	3.0	6.0	3.0	9.0
Lyons-Carnahan	10.0	10.0	0.0	0	8.0	7.5	.5	.25	5.5	4.5	1.0	1.0
C. E. Merrill	7.0	5.5	1.5	2.25	8.0	5.0	3.0	9.0	4.0	7.0	3.0	9.0

$\Sigma D^2 = 61.0$

$R = 1 - \frac{6(61.0)}{10(100-1)}$

$R = 1.00-.37 = .63$

$\Sigma D^2 = 74.5$

$R = 1 - \frac{6(74.5)}{10(100-1)}$

$R = 1.00-.45 = .55$

$\Sigma D^2 = 177.5$

$R = 1 - \frac{6(177.5)}{10(100-1)}$

$R = 1.00-1.07 = -.07$

Table 2-C Dale-Chall - Fry (4-6)

	Grade 4 Rank Orders				Grade 5 Rank Orders				Grade 6 Rank Orders			
Publisher	Dale-Chall	Fry	D	D^2	Dale-Chall	Fry	D	D^2	Dale-Chall	Fry	D	D^2
Harper-Row	1.0	2.0	1.0	1.0	1.0	4.0	3.0	9.0	10.0	2.0	8.0	64.0
Silver-Burdett	4.0	8.5	4.5	20.25	2.0	5.5	3.5	12.25	1.0	5.0	4.0	16.0
D. C. Heath	2.0	6.5	4.5	20.25	5.0	5.5	.5	.25	5.5	10.0	4.5	20.25
McMillan	8.5	4.5	4.0	16.0	3.0	2.0	1.0	1.0	8.5	7.5	1.0	1.0
Allyn-Bacon	6.0	10.0	4.0	16.0	8.0	9.0	1.0	1.0	7.0	9.0	2.0	4.0
Scott-Foresman	5.0	6.5	1.5	2.25	10.0	8.0	2.0	4.0	8.5	7.5	1.0	1.0
Laidlaw	8.5	3.0	5.5	30.25	5.0	1.0	4.0	16.0	2.0	5.0	3.0	9.0
Harcourt, Brace & World	3.0	4.5	1.5	2.25	5.0	10.0	5.0	25.0	3.0	1.0	2.0	4.0
Lyons-Carnahan	10.0	8.5	1.5	2.25	8.0	3.0	5.0	25.0	5.5	5.0	.5	.25
C. E. Merrill	7.0	1.0	6.0	36.0	8.0	7.0	1.0	1.0	4.0	3.0	1.0	1.0

$\Sigma D^2 = 150.5$

$R = 1 - \frac{6(150.5)}{10(100-1)}$

$R = 1.00 - .90 = .10$

$\Sigma D^2 = 94.5$

$R = 1 - \frac{6(94.5)}{10(100-1)}$

$R = 1.00 - .41 = .59$

$\Sigma D^2 = 130.5$

$R = 1 - \frac{6(130.5)}{10(100-1)}$

$R = 1.00 - .78 = .32$

Table 2-D Lorge - Fry (4-6)

	Grade 4 Rank Orders				Grade 5 Rank Orders				Grade 6 Rank Orders			
Publisher	Lorge	Fry	D	D^2	Lorge	Fry	D	D^2	Lorge	Fry	D	D^2
Harper-Row	2.5	2.0	.5	.25	1.0	4.0	3.0	9.0	1.0	2.0	1.0	1.0
Silver-Burdett	1.0	8.5	7.5	56.25	2.0	5.5	2.0	12.25	2.0	5.0	3.0	9.0
D. C. Heath	2.5	6.5	4.0	16.0	7.5	5.5	2.0	4.0	4.5	10.0	5.5	30.25
McMillan	9.0	4.5	4.5	20.25	3.5	2.0	1.5	2.25	9.0	7.5	1.5	2.25
Allyn & Bacon	5.5	10.0	4.5	20.25	10.0	9.0	1.0	1.0	10.0	9.0	1.0	1.0
Scott-Foresman	7.5	6.5	1.0	1.0	3.5	8.0	5.5	30.25	3.0	7.5	4.5	20.25
Laidlaw	4.0	3.0	1.0	1.0	7.5	1.0	6.5	42.25	8.0	5.0	3.0	9.0
Harcourt, Brace & World	7.5	4.5	3.0	9.0	7.5	10.0	2.5	6.25	6.0	1.0	5.0	25.0
Lyons-Carnahan	10.0	8.5	1.5	2.25	7.5	3.0	4.5	20.25	4.5	5.0	.5	2.25
C. E. Merrill	5.5	1.0	4.5	20.25	5.0	7.0	2.0	4.0	7.0	3.0	4.0	16.0

$\Sigma D^2 = 146.5$ $\Sigma D^2 = 131.5$ $\Sigma D^2 = 114.0$

$R = 1 - \frac{6(146.5)}{10(100-1)}$ $R = 1 - \frac{6(131.5)}{10(100-1)}$ $R = 1 - \frac{6(114.0)}{10(100-1)}$

$R = 1.00 - .88 = .12$ $R = 1.00 - .79 = .21$ $R = 1.00 - .69 = .31$

The results derived from computing the Spearman rank order coefficient among the various readability formulas when applied to the grade levels of the several publishers indicate that no highly correlated relationships existed. The relationships were mostly negligible and in a few cases only slight.

The results indicated that the higher correlations existed in the fourth and fifth grades between the Dale-Chall and the Lorge formulas and between the Dale-Chall and Fry formulas in the fifth and sixth grades. In these cases the relationships were only negligable.

Conclusions and Recommendations

The results of this study indicated that publishers of elementary science textbooks attempt to adjust the reading levels of their books to reading levels of

children. When discrepencies occur between the average readability level of texts and the grade level the differences can be attributed to the introduction of science terminology and sentence structure.

The findings suggest that before children are asked to read selections in the texts teachers should provide vocabulary and chapter preview. This process can most effectively be done by:

(1) Introducing new words through concrete examples.

(2) Allowing students time to study and discuss pictures and charts.

(3) Allowing students time to preview bold face headings.

(4) Allowing students time to ask themselves questions which they hope reading the chapter will answer.

(5) Providing students time to preview the questions at the end of the chapter.

The results of the study also indicated that the four reading formulas which were applied to the passages in the texts measure different aspects of the reading and have little correlation. When analyzing the readability level of science texts teachers and supervisors need to apply a variety of formulas and evaluate the texts in respect to their criteria of reading.

Through analysis of the data and upon examination of the texts the author has ranked the textbooks used in this study according to reading difficulty, and mode of presentation. The ranking of publishers proceeds from the more difficult to the easier.

Table 3-A Rank Order of Publishers According to Reading Difficulty

Grades 1-6	Grades 1-3	Grades 4-6
Harper - Row	C. E. Merrill	Harper - Row
Silver - Burdett	Silver - Burdett	Silver - Burdett
C. E. Merrill	Harper - Row	Laidlaw
Laidlaw	D. C. Heath	Harcourt, Brace, World
Harcourt, Brace, World	Laidlaw	C. E. Merrill
D. C. Heath	McMillan	D. C. Heath
McMillan	Allyn & Bacon	McMillan
Lyons - Carnahan	Harcourt, Brace, World	Scott - Foresman
Allyn & Bacon	Lyons - Carnahan	Lyons - Carnahan
Scott-Foresman	Scott - Foresman	Allyn & Bacon

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